Table VII: Outcome of treatment (New Cases)

Type	1985		1986		1887		1888	
Cured	270	23.0%	464	27.2%	602	32.8%	870	49.2%
Completed	560	47.7%	765	44.9%	689	37.5%	371	21.0%
Died	45	3.8%	50	2.9%	46	2.5%	58	3.3%
Failure	87	7.4%	78	4.6%	60	3.3%	44	2.5%
Abandoned	187	15.9%	325	19.1%	362	19.7%	179	10.1%
Transfer out	25	2.1%	21	1.2%	78	4.2%	246	13.9%
Total	1174	100.0%	1703	100.0%	1837	100.0%	1768	100.0%

Notes:

New Cases — patients who were diagnosed for the first time as having tuberculosis

Table VIII: Outcome of treatment (Relapses)

Type	1985		1986		1887		1888	
Cured	17	22.1%	35	30.4%	31	31.3%	46	54.8%
Completed	31	40.3%	30	26.1%	31	31.3%	13	15.5%
Died	6	7.8%	7	6.1%	8	8.1%	5	6.0%
Failure	11	14.3%	20	17.4%	10	10.1%	10	11.9%
Abandoned	7	9.1%	13	11.3%	14	14.1%	5	6.0%
Transfer out	5	6.5%	10	8.7%	5	5.1%	5	6.0%
Total	77	100.0%	115	100.0%	99	100.0%	84	100.0%

Notes:

Relapses — patients who were declared cured but experienced again the disease

Table IX: Outcome of treatment by migration *

Outcome	Stable		Migratory	
Successful	4366	71.8%	460	59.6%
Unsuccessful	1719	28.2%	312	40.4%
Total	6085	100.0%	772	100.0%

Notes:
Successful Cured or Treatment Completed
Unsuccessful Died or Failure or Abandoned or Transfer Out
* $p<0.001$

Table X: Outcome of treatment by sex and age (male)

Outcome	Age <=14 y		Age 15-50 y		Age >=51 y	
Successful	49	74.2%	1333	66.4%	363	65.9%
Unsuccessful	17	25.8%	676	33.6%	188	34.1%
Total	66	100.0%	2009	100.0%	551	100.0%

Notes:
Successful Cured or Treatment Completed
Unsuccessful Died or Failure or Abandoned or Transfer Out

Table XI: Outcome of treatment by sex and age (female)

Outcome	Age <=14 y		Age 15-50 y		Age >=51 y	
Successful	85	78.7%	2597	73.2%	369	68.8%
Unsuccessful	23	21.3%	950	26.8%	167	31.2%
Total	108	100.0%	3547	100.0%	536	100.0%

Notes:
Successful Cured or Treatment Completed
Unsuccessful Died or Failure or Abandoned or Transfer Out

Tuberculosis Control Programme Among Afghan Refugees in North West Frontier Province - Pakistan

Operational evaluation of treatment in smear positive cases (1985-1988)

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INTRODUCTION

Pakistan experienced in the period 1979-1982 a large influx of refugees from Afghanistan. More than 2 million registered refugees live in 240 camps in North West Frontier Province - Pakistan (NWFP).
On April 1983 the Governments of Pakistan and Italy signed an agreement in order to establish a Tuberculosis Control Programme among Afghan refugees.
Since June 1985 the programme has been operative all over the Province with standardized methodologies of diagnosis, treatment and data collection.
For this purpose, manuals were prepared describing in detail case-finding (including sputum collection), treatment, recording and reporting activities
For laboratory procedures (including sputum collection) the IUAT (International Union Against Tuberculosis) manual was adopted.
Appropriate training and refresher courses are held for the health staff involved in the refugee care in order to introduce and/or improve the programme activities.
The Italian Government is responsible for supplying antituberculosis drugs, laboratory equipments, laboratory reagents and sputum containers. A supply system was developed in 1985 and no shortcomings occurred up to now, particularly in respect of supply of drugs.
For the setting up of the programme the following Health facilities were established in the period 1984-1985:

- one Referral Laboratory (culture, sensitivity test and quality control)
- 32 Field Laboratories (direct microscopy)
- two mobile X-Ray Units
- three supervisory teams visiting all the Basic Health Units (BHU) and laboratories in NWFP every two months .

The general policy follows the recommendations of the WHO Expert Committee on Tuberculosis.
A summary of diagnostic activities is reported in Table I.
Up to the middle of 1986, according on the decision of the medical officer, pulmonary smear positive patients were treated with the following two daily unsupervised (checking and drug collection once a week) regimens :

short course: 2 months of isoniazid (INH) + pyrazinamide (PZA) + rifampicin (RIF) + steptomycin (SM) followed by 6 months of INH + thiacetazone (TH)
standard: 2 months of INH + TH + SM followed by 10 months of INH + TH.

From the second half of 1986 the short course has been the choice regimen for smear positive patients.

Since the outcome of treatment in persons with communicable forms of the disease is the essential element of a successful Tuberculosis Control Programme, we decided to verify the results of our programme with a cohort study of smear positive patients registered in the period 1985 - 1988

METHODS

Between January and March 1990 we collected all the BHU TB Registers of the period 1985-1988. All the information regarding patients (district of residence ,BHU, serial number, sex, age, refugee or Pakistani, starting date, type of disease and type of patient, regimen, all the results and dates of sputum examination, definition and date of treatment ending, number and dates of defaulting periods) were recorded on magnetic media using a mirror image of the register built by 4th Dimension Software (1).
All the patients put on treatment for Tuberculosis in 1985-1988, who had acid fast bacilli seen on stained smears of sputum were evaluated.
The definitions used are as follows:

Case finding

New case	patients who were diagnosed for the first time as having tuberculosis
Relapse	patients who were declared cured but experienced again the disease

Outcome of treatment (standardized period of observation equal to 15 months)

Cured	chemotherapy completed and at least two negative smear results obtained at an interval of three months or more
Treatment completed	chemotherapy completed, no clinical sign of Tuberculosis but no smear results or only one negative smear before discharge
Died	patients known to have died from any cause whatsoever
Failure	patients with a positive smear after the first 5 months of treatment (any regimen)
Abandoned treatment	patients who have not attended for 3 or more consecutive months
Transferred out	patients who have been transferred to another health facility

The outcome of treatment was determined, according to the above defined criteria, running an appositely written Pascal program on the base set of data.
In order to verify multiple effects on treatment outcome, the latter was also transformed in a binary variable:

Successful	Cured or Treatment completed
Unsuccessful	all the other outcomes

Data were evaluated on a Macintosh SE/30 computer using Systat statistical package (2).
A regression logistic model was used to study multiple effects on treatment outcome.

DISCUSSION

The finding of a significantly higher prevalence of tuberculosis among women confirms the common observation by physicians working in camps in a period exceeding by large the present study. Although the age-sex distribution of the general refugee population living in the camps is not available, it is possible to assume that young men are likely to be less represented because of being involved in war operations in Afghanistan. The same reason might explain the lower successful outcome associated to male 14 to 50 years of age: young men abandon treatment, as soon as symptoms improve, to join the Holy Jihad.

The second significant effect is the migratory status of the population. During the hot season in 4 districts (Bannu, South and North Wasiristan and D.I.K.) takes place a large migration.

The frequency of the migration is twice a year, approximately every six months, so that all the patients undergo at least one migration. To follow this phenomenon it was decided to transfer patients, but a large part of them are lost during this procedure.

In order to better understand the phenomenon and to improve our case holding activity we are running a study on the fate of under treatment cases during the 1990 migrations.

Keeping in mind the problems related to war and migration, we think that the outcome of our programme is acceptable. As a matter of fact our success rate is similar to that reported by Rieder in an indochinese refugee camp using a more expensive, fully supervised six months regimen (3).

Our results confirm that refugee population, even in the absence of a fully supervised regimen, are usually a compliant population, but,due to various circumstances, are often forced to abandon treatment (4).

REFERENCES

1) ACIUS: 4th Dimension - version 2.05 - Language reference manual. Cupertino, CA 1989
2) Wilkinson, Leland: SYSTAT: The system for statistics - version 3.2. Evanston, IL SYSTAT Inc. 1987
3) Rieder HL: Tuberculosis in an Indochinese refugee camp: epidemiology, management and Therapeutic results. Tubercle 1985; 66: 179-186
4) Miles SH, Maat BR: A successful supervised outpatient short-course Tuberculosis treatment program in an open refugee camp on the Thai-Cambodian border Am Rev Respir Dis 1984; 130: 827-830

Table I: Diagnostic activities

Year	Population	Method	Examined	% *
1985	1900000			
		Direct Microscopy	13112	0.69%
		Chest XRay	**	
1986	2100000			
		Direct Microscopy	23538	1.12%
		Chest XRay	8142	0.39%
1987	2150000			
		Direct Microscopy	26347	1.23%
		Chest XRay	15423	0.72%
1988	2235000			
		Direct Microscopy	25927	1.16%
		Chest XRay	12618	0.56%
1989	2289000			
		Direct Microscopy	28340	1.24%
		Chest XRay	13568	0.59%

Notes:

* Examined/Population

** The mobile XRay units started working in 1986

Table II: Distribution of case finding

Type	1985		1986		1887		1888	
New Cases	1174	93.8%	1703	93.7%	1837	94.9%	1768	95.5%
Relapses	77	6.2%	115	6.3%	99	5.1%	84	4.5%
Total	1251	100.0%	1818	100.0%	1936	100.0%	1852	100.0%

Notes:

New Cases — patients who were diagnosed for the first time as having tuberculosis

Relapses — patients who were declared cured but experienced again the disease

Table III: Sex and age distribution of enrolled patients from 1985 to 1988 *

Age (year)	Female		Male		Total	
Missing	31	0.7%	9	0.3%	40	0.6%
<=14	108	2.6%	66	2.5%	174	2.5%
15-50	3547	84.0%	2009	76.2%	5556	81.0%
>=51	536	12.7%	551	20.9%	1087	15.9%
Total	4222	100.0%	2635	100.0%	6857	100.0%

Notes:
* $p<0.01$ for the classes 15-50 and >=51

Table IV: Origin of enrolled population

Origin	1985		1986		1887		1888	
Pakistani	9	0.7%	69	3.8%	65	3.4%	51	2.8%
Refugees	1242	99.3%	1749	96.2%	1871	96.6%	1801	97.2%
Total	1251	100.0%	1818	100.0%	1936	100.0%	1852	100.0%

Table V: Distribution of treatment regimen

Origin	1985		1986		1887		1888	
Missing	200	16.0%	82	4.5%	17	0.9%	11	0.6%
Short Course	748	59.8%	1535	84.4%	1794	92.7%	1780	96.1%
Standard	303	24.2%	201	11.1%	125	6.5%	61	3.3%
Total	1251	100.0%	1818	100.0%	1936	100.0%	1852	100.0%

Notes:

Missing	data not available
Short Course	2 INH PZA RIF SM/6 INH TH
Standard	2 INH SM TH/6 INH TH

Table VI: Sputum conversion (1988 New Cases: 1768 patients)

	Present (PR)	Examined (EX)	EX/PR	Negative (NEG)	NEG/EX	Positive (POS)	POS/EX
2nd month	1682	1154	68.61%	1025	88.82%	129	11.18%
5th month	1413	924	65.39%	868	93.94%	56	6.06%
8th month	1285	1080	84.05%	1036	95.93%	44	4.07%

13,242

TUBERCULOSIS CONTROL PROGRAMME
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WEST FRONTIER PROVINCE-PAKISTAN